



North Carolina Department of Environment and Natural Resources  
Division of Water Quality

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Director

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August 18, 2009

MEMORANDUM

To: Mr. Jim Kohler, P.E.  
Environmental Engineer LT, U.S. Public Health Service  
U.S. Environmental Protection Agency  
Office of Resource Conservation and Recovery

From: Autumn Hoban-Romanski  
Raleigh Regional Office, Surface Water Protection Section  
Division of Water Quality

Through: Danny Smith  
Raleigh Regional Office, Surface Water Protection Section  
Division of Water Quality

Subject: Impoundment Inspection Comments  
Mayo Steam Electric Power Plant  
**NPDES Wastewater Discharge**  
**Permit No. NC0038377**

The Surface Water Protection Section (SWP) of the Raleigh Regional Office of the North Carolina Division of Water Quality (DWQ) conducted an inspection of the Mayo Steam Electric Power Plant on May 12, 2009. This inspection was conducted to verify that the facility is operating in compliance with the conditions and limitations specified in NPDES Wastewater Permit No. NC0038377 (this permit includes stormwater). The facility was determined to be in compliance with the NPDES Wastewater Permit and a summary of the findings and comments noted during this inspection is available upon your request.

Autumn Hoban-Romanski of the Raleigh Regional Office Surface Water Protection Section also participated in the CCW Surface Impoundment Assessment conducted at the Mayo Plant Site on June 3, 2009. The EPA Impoundment Condition Assessment was satisfactory for the Mayo Plant Site.

With respect to the report and results of the June 3, 2009 inspection, please see the below listed items:

One  
North Carolina  
*Naturally*



- (1) The impoundment inspection provided an opportunity to better understand the NPDES discharge outfall to Crutchfield Branch. We observed a continuous discharge of *clear* water (seepage) from the East and West sides of the dam that combines and flows to Crutchfield Branch. This flow originates from the dam's chimney drain system. The East and West side discharge flows are visually monitored for turbidity changes and fixed time, fixed volume flow measurements (with a graduated cylinder and a stopwatch) are conducted to monitor flow changes. The recording and monitoring of changes observed provides the plant with a tool to check the dam.

The plant must perform grab samples at Crutchfield Branch and report Total Recoverable Copper (Cu), Total Recoverable Arsenic (As), and Total Recoverable Selenium (Se) annually. The sample results as reported for 2008 were as follows:

Total Cu = <10 ug/L

Total As = <0.005 mg/L

Total Se = <0.002 mg/L

- (2) This Office requested the plant submit a solids management plan that specifically addresses the current capacities and ultimate disposal of solids from the "*Ash Pond*", the new Flue Gas Desulfurization (FGD) Settling Pond, and the new FGD Flush Pond. This information will enhance our understanding of the "actual" future impacts of the new FGD wastewater treatment units to the "*Ash Pond*" retention time, solids holding capacity, available freeboard of the "*Ash Pond*", since operation of the new FGD units just started in mid June 2009.

Note: Progress Energy installed wet limestone, forced oxidation flue gas desulfurization (FGD) scrubbers at the Mayo Steam Electric Plant in response to requirements from the State of North Carolina under the clean smokestacks legislation. This precipitated the installation of the FGD Settling Pond, Bioreactor, and FGD Flush Pond.

- (3) The FGD bioreactor effluent will not receive the benefit of "*Ash Pond Retention*" since it exits to the polishing pond section of the "*Ash Pond*" just prior to the final NPDES Discharge Outfall 002.
- (4) Please NOTE: Another new FGD Settling Pond, bioreactor, and flush pond has been operational at the Roxboro Steam Electric Power Plant in Semora, NC since February 2008. This facility has an "*Ash Pond*" that was significantly altered to accommodate the new FGD treatment units. This "*Ash Pond Impoundment*" has not yet been evaluated by the EPA, but merits EPA review due to its location on Hyco Lake, a Water Supply V, Class B Recreational Lake with a number of residential neighborhoods nearby.

If you have any questions or if I can be of further assistance, please do not hesitate to contact me.

Attachments

Cc: Raleigh Regional Office – DWQ SWP and DLQ Files



## Mayo Dam Assessment Report Comments

Page ii

- Introduction last paragraph: remove the word Carolina from Progress Energy Carolina Mayo facility
- Introduction last paragraph: Mayo has a singular subject management unit not units.

Page ii

Purpose and scope

- First sentence in the second paragraph refers to coal combustion residue, it should be referred to throughout the document as coal combustion products

Page 1-1

- Footer refers to the plant location as Mayo, North Carolina, in should be Roxboro, North Carolina.

Page 1-2

Section 1.2.2

- "...however a dam break analysis should be performed as part of an emergency action plan." implies that the facility does not have an emergency action plan. The facility does have an emergency dam failure procedure. ...however a dam break analysis should be performed and included as part of the Plants existing emergency dam failure procedure.
- Please provide a federal or state regulatory citation that requires a dam break analysis on a dam classified as Significant Hazard potential.

Section 1.2.6

- Wording of the paragraph seems to indicate the current mowing practice at the plant is unacceptable and creating ruts throughout the embankment, especially when wet.
- It is recommended that drain outlets be protected with small animal guards. In the past, small amounts of iron bacteria have caused accumulation of soft deposits in weep holes in the head walls of the weir boxes and signs of staining around the base of the seepage drain pipes are seen. This indicates very slight suspended particles are being carried by the seepage flow. Placing a small screen suitable to prevent entry of small rodents and animals is likely to increase the potential for buildup of the iron deposits on the screen, possibly causing obstructions to the seepage flow. In the 20 years the dam has been in service, no instances of animals attempting to enter the pipes have been observed by Progress Energy personnel. The seepage flow, as noted by the inspector, has remained consistent over the period of measurement, indicating no animal

entries have caused blockages or disruption of flow. There is no indication a problem exists that needs the preventive measure suggested, and the suggested measure could increase potential for clogging. With the present arrangement of the weir, it would be possible to place a removable screen over the front of the weir box itself to block possible entry of small animals. Such a screen could be removed and cleaned if iron deposits build up. The frequency of weir flow measurements (quarterly) is sufficient to observe and respond to a need for cleaning before a blockage of the screen would cause backup of water within the weir box.

- Recommended new Paragraph as follows: When mowing a wet embankment it is recommended to take caution not to create ruts perpendicular to the embankment slope. An herbaceous vegetative cover needs to be established in bare areas where soil is visible. Also it is recommended that a removable screen be placed over the front of the weir box to block possible entry of small animals.
- Footer refers to the plant location as Mayo, North Carolina, in should be Roxboro, North Carolina.

Page 1-3

- Footer refers to the plant location as Mayo, North Carolina, in should be Roxboro, North Carolina.

Page 2-1

Section 2.2 and 2.3

- There is some confusion between the storage capacity and the total storage capacity of the pond. Section 2.3 references the total storage capacity of the pond as 4,100 acre feet. While Section 2.2 and Table 2.3 reference the pond storage capacity as 6,000 acre feet. The total pond storage capacity is 6,000 acre feet. The current storage capacity or the top of water storage capacity is 4,100 acre feet. Section 2.3 sentence 4 should read: The current storage capacity is 4,100acre feet.

Page 3-1

Section 3.2

- “No local state or federal permits have been provided for this dam.” Statement indicates that it is regulated by NCUC and is not required to have any other local, state or federal permits. The pond’s discharge is regulated under an NPDES permit, it has an Authorization to Construct issued by NCDENR for the treatment facility and has a 401/404 permit for construction.

Page 4-1

#### Section 4.2.1

- Second sentence states: “Coal combustion process waste water... .” Should be restated as, Plant process waste water....

Page 6-1

#### Section 6.1.2

- The third sentence states: “The recommended spillway design flood for high hazard intermediate sized structure,...” Is there a definition of high hazard intermediate sized structure that could be added to this paragraph so it is clear to the reader the Mayo ash pond falls in to this category?
- The paragraph seems to lead the reader to believe that the ash pond was designed using the PMP models versus the PMF model, which is recommended by the USACE. It also implies that the PMP model is more conservative than the PMF model, which is why the facility is in compliance with the regulation. If that assumption is correct, please revise the paragraph to make that fact clearer to the reader.

Page 8-1

#### Section 8.3.2

- It was recommended that all under drain outlets be protected with small animal guards. Same comment as Section 1.2.6: In the past, small amounts of iron bacteria have caused accumulation of soft deposits in weep holes in the head walls of the weir boxes and signs of staining around the base of the seepage drain pipes are seen. This indicates very slight suspended particles are being carried by the seepage flow. Placing a small screen suitable to prevent entry of small rodents and animals is likely to increase the potential for buildup of the iron deposits on the screen, possibly causing obstructions to the seepage flow. In the 20 years the dam has been in service, no instances of animals attempting to enter the pipes have been observed by Progress Energy personnel. The seepage flow, as noted by the inspector, has remained consistent over the period of measurement, indicating no animal entries have caused blockages or disruption of flow. There is no indication a problem exists that warrants the preventive measure suggested, and the suggested measure could increase potential for clogging. With the present arrangement of the weir, it would be possible to place a removable screen over the front of the weir box itself to block possible entry of small animals. Such a screen could be removed and cleaned if iron deposits build up. The frequency of weir flow measurements (quarterly) is sufficient to observe and respond to a need for cleaning before a blockage of the screen would cause backup of water within the weir box.
- Grass needs to be established in bare areas where soil is visible. Herbaceous vegetation needs to be established...

- Section 9.1 references semi-annual inspections, at the time of the visit of EPA and its contractor, the site was completing semi-annual visual inspections, however due to TVA and departmental draft guidance the facility has begun monthly visual inspections.
- Section 9.2.1 Please remove the reference to Asheville in the sixth sentence of the paragraph.